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Claims

[c1] 1. A structure applied to a photolithographic process, comprising:
a substrate having at least a film layer thereon;
an optical isolation layer set up over the substrate to cover the film layer;
an anti-reflection coating set up over the optical isolation layer; and
a photoresist layer set up over the anti-reflection coating.

[c2] 2. The structure of claim 1, wherein the optical isolation layer has a light absorbing coefficient greater than 1.8.

[c3] 3. The structure of claim 1, wherein material constituting the optical isolation layer comprises a conductive material.

[c4] 4. The structure of claim 1, wherein material constituting the optical isolation layer comprises a metallic material.

[c5] 5. The structure of claim 1, wherein material constituting the anti-reflection coating comprises an organic material.

[c6] 6. The structure of claim 1, wherein material constituting the anti-reflection coating comprises an inorganic material.

[c7] 7. A method of fabricating a semiconductor device, comprising the steps of:
providing a substrate having at least a film layer, an optical isolation layer, an anti-reflection coating and a photoresist layer sequentially formed thereon;
performing a photolithographic process to pattern the photoresist layer so that a portion of the anti-reflection coating is exposed; and
patterning the anti-reflection coating, the optical isolation layer and the film layer using the patterned photoresist layer as a mask to form an opening in the film layer.

[c8] 8. The method of claim 7, wherein the step for patterning the anti-reflection coating, the optical isolation layer and the film layer comprises performing an etching operation in which the film layer has an etching rate much greater than the optical isolation layer.

[c9] 9. The method of claim 8, wherein the patterned photoresist layer and the patterned anti-reflection coating are also removed in the etching process.

[c10] 10. The method of claim 7, wherein after forming the opening, the method further comprises:
removing the patterned photoresist layer and the anti-reflection coating;
forming a material layer over the substrate covering the optical isolation layer and completely filling the opening; and
performing a chemical-mechanical polishing operation using the optical isolation layer as a polishing stop layer to remove the material layer over the optical isolation layer.

[c11] 11. A method of fabricating a semiconductor device, comprising the steps of:
providing a substrate having at least a film layer, an optical isolation layer, an anti-reflection coating and a photoresist layer sequentially formed thereon;
performing a photolithographic process to pattern the photoresist layer and expose a portion of the anti-reflection coating;
patterning the anti-reflection coating and the optical isolation layer using the patterned photoresist layer as a mask;
removing the patterned photoresist layer and the patterned anti-reflection coating; and
performing an etching operation using the optical isola-

tion layer as an etching mask to form an opening in the film layer.

[c12] 12. The method of claim 11, wherein after forming the opening, the method further comprises:
forming a material layer over the substrate covering the optical isolation layer and completely filling the opening; and
performing a chemical-mechanical polishing operation using the optical isolation layer as a polishing stop layer to remove the material layer over the optical isolation layer.

[c13] 13. The method of claim 11, wherein the film layer has an etching rate greater than that of the optical isolation layer in the etching operation.